WIX1002 Fundamentals of Programming
Lab 5: Arrays

1. Write a program to randomly generate N student scores (0-100). The program will prompt the user to enter N students and store the score in an array. Then, the program will display a list of score, the highest score, the lowest score and the average score.

2. Write a program that generates 10 non-duplicate random integers within the range from 0 to 20.

3. Write a program that randomly generate the seven day work hours (1-8 hours) for N employee. Then, display the work hours in seven days and the total hours for each employee.

4. Write a program that rotates 90 degrees clockwise a 3 by 3 matrix.

```
3 by 3 Matrix
1  5  7
3  6  9
5  3  8
After rotates 90 degrees clockwise
5  3  1
3  6  5
8  9  7
```

5. Write a program that generates 20 random integers within the range from 0 to 100. Sort the array in descending order. Then, accepts an integer input from the user. Then, search the array using this number. Compare the performance of linear search and binary search.

```
A list of 20 random integer within 0 to 100
57, 53, 46, 83, 74, 99, 30, 75, 61, 89, 28, 30, 56, 41, 27, 32, 79, 48, 46, 88
Array in descending order
99, 89, 88, 83, 79, 75, 74, 61, 57, 56, 53, 48, 46, 46, 41, 32, 30, 30, 28, 27
Enter a number to search: 41
41 found
Linear Search - 14 loop(s)
41 found
Binary Search - 2 loop(s)
```

6. Write a program that used to create Pascal Triangle in the square matrix. The program will accept an integer from the users and use the integer to create the Pascal Triangle.

```
Enter the number of row of Pascal Triangle to generate: 6
The Pascal Triangle with 6 row(s)
1  0  0  0  0  0
1  1  0  0  0  0
1  2  1  0  0  0
1  3  3  1  0  0
1  4  6  4  1  0
1  5  10 10 5  1
```